

AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions, and listings, of claims in the application.

Listing of Claims:

1-22. (Canceled)

23. (Currently Amended) A tooth whitening set for reversibly making tooth look white in the presence of water from saliva without chemical bleaching reactions due to a peroxide, comprising a nonaqueous gel composition for tooth whitening and a tool for its application which is detachably fitted to teeth while holding it,

said nonaqueous gel composition comprising:

(A) a tooth whitening ingredient having a relative permittivity of 17.0 to 43.0 (at 25°C) and a vapor pressure of 0 to 7000 kPa (at 25°C), said tooth whitening ingredient (A) is selected from the group consisting of isopropanol, butanol, ethylene glycol, polyethylene glycol with an average molecular weight of 190 to 630, diethylene glycol, propylene glycol, dipropylene glycol, butylene glycol, and glycerin, and said ingredient (A) is present in an amount of 50.0 to 99.5 % by weight of the total amount of the composition,

(B) a substance which dissolves in said tooth whitening ingredient and is precipitated by an aqueous solution of calcium chloride, said substance (B) is at least one selected from the group consisting of ~~myristic acid, 7-hydroxymyristic acid, jaluric acid, 9,10,16-trihydroxypalmitic acid, palmitoleic acid, 12-hydroxystearic acid, isostearic acid, oleic acid, linoleic acid, linolenic acid, erucic acid, shellac, t-Bu acrylate/ethyl acrylate/methacrylic acid copolymer, methyl acrylate/methacrylic acid copolymer, methyl methacrylate/methacrylic acid copolymer, acrylic acid/acrylamide/ethyl acrylate copolymer, octylacrylamide/acrylate ester copolymer, and methyl methacrylate/ethyl acrylate/methacrylic acid trimethylammonium ethyl chloride copolymer,~~ and said substance (B) is present in an amount of 0.1 to 10 % by weight of the total amount of the composition, and

(C) a gelling agent in an amount of 0.1 to 15 % by weight of the total amount of the composition,

wherein said composition has a water content of less than 3% by weight of the total amount of the composition and being free of a peroxide,

said tool for its application being a tape, sheet or film which retains and keeps the composition in position in contact with teeth for 1 to 120 minutes by covering the composition and preventing the dilution of the composition by invasion of saliva to ensure that the tooth whitening ingredient infiltrates into an enamel through its surface and to remain in the enamel, and

said substance (B) which has been dissolved in the tooth whitening ingredient being precipitated by water in saliva to prevent the tooth whitening ingredient in the enamel from easily leaching out and being replaced by water in saliva, thereby changing optical properties of the enamel without chemical reactions so that the enamel looks apparently cloudy and whiter than original.

24. **(Previously Presented)** The tooth whitening set as defined in claim 23, wherein the tooth whitening ingredient (A) is at least one selected from the group consisting of polyethylene glycol with an average molecular weight of 190 to 630, butylene glycol, and glycerin.

25. **(Canceled)**

26. **(Currently Amended)** The tooth whitening set as defined in claim 23, wherein the substance (B) is at least one selected from the group consisting of ~~isostearic acid, shellac,~~ t-Bu acrylate/ethyl acrylate/methacrylic acid copolymer, acrylic acid/acrylamide/ethyl acrylate copolymer, octylacrylamide/acrylate ester copolymer, and methyl methacrylate/ethyl acrylate/methacrylic acid trimethylammonium ethyl chloride copolymer.

27. **(Previously Presented)** The tooth whitening set as defined in claim 23, wherein the gelling agent (C) is at least one selected from the group consisting of polyacrylic acid, carboxyvinyl polymer, hydroxypropyl cellulose, carboxymethyl cellulose, and salts thereof.

28-29. (Canceled)

30. (Previously Presented) The tooth whitening set as defined in claim 23, wherein said tool for application is made of water-insoluble material, which gives a pleasant feeling in the mouth and prevents excess salivation during use, thereby permitting the gel composition to stay in the mouth for a long period of time, and

said material is selected from the group consisting of polyethylene, foamed polyethylene, polypropylene, foamed polypropylene, polyester, polyurethane, rayon, pulp, cotton, silk, paper, metal foil, silicone rubber, natural rubber, vinyl acetate resin, acrylic resin and ethylene-vinyl acetate resin.

31. (Currently Amended) A tooth whitening set for reversibly making tooth look white in the presence of water from saliva without chemical bleaching reactions due to a peroxide, comprising a nonaqueous gel composition for tooth whitening and a tool for its application which is detachably fitted to teeth while holding it, said nonaqueous gel composition comprising:

(A) a tooth whitening ingredient having a relative permittivity of 17.0 to 43.0 (at 25°C) and a vapor pressure of 0 to 7000 kPa (at 25°C), and said ingredient (A) is present in an amount of 50.0 to 99.5 % by weight of the total amount of the composition,

(B) a substance which dissolves in said tooth whitening ingredient and is precipitated by an aqueous solution of calcium chloride, said substance (B) is at least one selected from the group consisting of ~~myristic acid, 7-hydroxymyristic acid, jaluric acid, 9,10,16-trihydroxypalmitic acid, palmitoleic acid, 12-hydroxystearic acid, isostearic acid, oleic acid, linoleic acid, linolenic acid, erucic acid, shellac, t-Bu acrylate/ethyl acrylate/methacrylic acid copolymer, methyl acrylate/methacrylic acid copolymer, methyl methacrylate/methacrylic acid copolymer, acrylic acid/acrylamide/ethyl acrylate copolymer, octylacrylamide/acrylate ester copolymer, and methyl methacrylate/ethyl acrylate/methacrylic acid trimethylammonium ethyl chloride copolymer,~~ and said substance (B) is present in an amount of 0.1 to 10 % by weight of the total amount of the composition, and

(C) a gelling agent in an amount of 0.1 to 15 % by weight of the total amount of the composition,

wherein said composition has a water content of less than 3% by weight of the total amount of the composition and being free of a peroxide,

said tool for its application being a tape, sheet or film which retains and keeps the composition in position in contact with teeth for 1 to 120 minutes by covering the composition and preventing the dilution of the composition by invasion of saliva to ensure that the tooth whitening ingredient infiltrates into an enamel through its surface and to remain in the enamel, and

said substance (B) which has been dissolved in the tooth whitening ingredient being precipitated by water in saliva to prevent the tooth whitening ingredient in the enamel from easily leaching out and being replaced by water in saliva, thereby changing optical properties of the enamel without chemical reactions so that the enamel looks apparently cloudy and whiter than original.

32. **(Previously Presented)** The tooth whitening set as defined in claim 31, wherein the tooth whitening ingredient (A) is at least one selected from the group consisting of polyethylene glycol with an average molecular weight of 190 to 630, butylene glycol, and glycerin.

33. **(Canceled)**

34. **(Currently Amended)** The tooth whitening set as defined in claim 31, wherein the substance (B) is at least one selected from the group consisting of ~~isostearic acid, shellac,~~ t-Bu acrylate/ethyl acrylate/methacrylic acid copolymer, acrylic acid/acrylamide/ethyl acrylate copolymer, octylacrylamide/acrylate ester copolymer, and methyl methacrylate/ethyl acrylate/methacrylic acid trimethylammonium ethyl chloride copolymer.

35. **(Previously Presented)** The tooth whitening set as defined in claim 31, wherein the gelling agent (C) is at least one selected from the group consisting of polyacrylic acid, carboxyvinyl polymer, hydroxypropyl cellulose, carboxymethyl cellulose, and salts thereof.

36-37. (Canceled)

38. (Previously Presented) The tooth whitening set as defined in claim 31, wherein said tool for application is made of water-insoluble material, which gives a pleasant feeling in the mouth and prevents excess salivation during use, thereby permitting the gel composition to stay in the mouth for a long period of time, and

said material is selected from the group consisting of polyethylene, foamed polyethylene, polypropylene, foamed polypropylene, polyester, polyurethane, rayon, pulp, cotton, silk, paper, metal foil, silicone rubber, natural rubber, vinyl acetate resin, acrylic resin and ethylene-vinyl acetate resin.

39. (Currently Amended) A method for reversibly making teeth look white in the presence of water from saliva without chemical bleaching reaction due to a peroxide,

said method comprising applying a tape, sheet or film having a nonaqueous gel composition,

said gel composition comprising:

(A) a tooth whitening ingredient having a relative permittivity of 17.0 to 43.0 (at 25°C) and a vapor pressure of 0 to 7000 kPa (at 25°C), said tooth whitening ingredient (A) is selected from the group consisting of isopropanol, butanol, ethylene glycol, polyethylene glycol with an average molecular weight of 190 to 630, diethylene glycol, propylene glycol, dipropylene glycol, butylene glycol, and glycerin, and wherein said ingredient (A) is present in an amount of 50.0 to 99.5 % by weight of the total amount of the composition,

(B) a substance which dissolves in said tooth whitening ingredient and is precipitated by an aqueous solution of calcium chloride, said substance (B) is at least one selected from the group consisting of ~~myristic acid, 7-hydroxymyristic acid, jalaric acid, 9,10,16-trihydroxypalmitic acid, palmitoleic acid, 12-hydroxystearic acid, isostearic acid, oleic acid, linoleic acid, linolenic acid, erucic acid, shellac, t-Bu acrylate/ethyl acrylate/methacrylic acid copolymer, methyl acrylate/methacrylic acid copolymer, methyl methacrylate/methacrylic acid copolymer, acrylic acid/acrylamide/ethyl acrylate copolymer, octylacrylamide/acrylate ester~~

copolymer, and methyl methacrylate/ethyl acrylate/methacrylic acid trimethylammonium ethyl chloride copolymer, and said substance (B) is present in an amount of 0.1 to 10 % by weight of the total amount of the composition, and

(C) a gelling agent in an amount of 0.1 to 15 % by weight of the total amount of the composition,

wherein said composition has a water content of less than 3% by weight of the total amount of the composition and being free of a bleaching agent or a peroxide,

said composition being coated thereon to teeth for 1 to 120 minutes so that the composition is stuck to teeth and covered by the tape, sheet or film thereby preventing the composition from being diluted by invasion of saliva,

said tooth whitening ingredient (A) is selected from the group consisting of isopropanol, butanol, ethylene glycol, polyethylene glycol with an average molecular weight of 190 to 630, diethylene glycol, propylene glycol, dipropylene glycol, butylene glycol, and glycerin,

said tooth whitening ingredient infiltrating into an enamel through its surface and to remain in the enamel,

said substance (B) which has been dissolved in the tooth whitening ingredient being precipitated by water in saliva to prevent the tooth whitening ingredient in the enamel from easily leaching out and being replaced by water in saliva, thereby changing optical properties of the enamel without chemical reactions so that the enamel looks apparently cloudy and whiter than original, and

after whitening, said one or more tooth whitening ingredients in the enamel is replaced by water from saliva, thereby going back to the original color of the enamel reversibly.

40. (Canceled)

41. (Currently Amended) A tooth whitening set for reversibly making tooth look white in the presence of water from saliva without chemical bleaching reactions due to a peroxide, comprising a nonaqueous gel composition for tooth whitening and a tool for its application which is detachably fitted to teeth while holding it, said nonaqueous gel composition comprising:

(A) a tooth whitening ingredient having a relative permittivity of 17.0 to 43.0 (at 25°C) and a vapor pressure of 0 to 7000 kPa (at 25°C), wherein said ingredient (A) is present in an amount of 50.0 to 99.5 % by weight of the total amount of the composition,

(B) a substance which dissolves in said tooth whitening ingredient and is precipitated by an aqueous solution of calcium chloride, said substance (B) is at least one acrylic acid copolymer, ~~selected from the group consisting of C₁₄₋₂₂ higher fatty acids and/or acrylic acid copolymers~~, and said substance (B) is present in an amount of 0.1 to 10 % by weight of the total amount of the composition, and

(C) a gelling agent in an amount of 0.1 to 15 % by weight of the total amount of the composition,

said composition having a water content of less than 3% by weight of the total amount of the composition and being free of a peroxide,

said tool for its application being a tape, sheet or film which retains and keeps the composition in position in contact with teeth for 1 to 120 minutes by covering the composition and preventing the dilution of the composition by invasion of saliva to ensure that the tooth whitening ingredient infiltrates into an enamel through its surface and to remain in the enamel, and

said substance (B) which has been dissolved in the tooth whitening ingredient being precipitated by water in saliva to prevent the tooth whitening ingredient in the enamel from easily leaching out and being replaced by water in saliva, thereby changing optical properties of the enamel without chemical reactions so that the enamel looks apparently cloudy and whiter than original.

42. **(Currently Amended)** A method for reversibly making teeth look white in the presence of water from saliva without chemical bleaching reaction due to a peroxide,

said method comprising applying a tape, sheet or film having a nonaqueous gel composition,

said gel composition comprising:

(A) a tooth whitening ingredient having a relative permittivity of 17.0 to 43.0 (at 25°C) and a vapor pressure of 0 to 7000 kPa (at 25°C), wherein said ingredient (A) is present in an amount of 50.0 to 99.5 % by weight of the total amount of the composition,

(B) a substance which dissolves in said tooth whitening ingredient and is precipitated by an aqueous solution of calcium chloride, said substance (B) is at least one acrylic acid copolymer, ~~selected from the group consisting of C₁₄₋₂₂ higher fatty acids and/or acrylic acid copolymers~~, said substance (B) is present in an amount of 0.1 to 10 % by weight of the total amount of the composition, and

(C) a gelling agent, in an amount of 0.1 to 15 % by weight of the total amount of the composition,

wherein said composition has a water content of less than 3 % by weight of the total amount of the composition and being free of a bleaching agent or a peroxide,

said composition being coated thereon to teeth for 1 to 120 minutes so that the composition is stuck to teeth and covered by the tape, sheet or film thereby preventing the composition from being diluted by invasion of saliva,

said tooth whitening ingredient infiltrates into an enamel through its surface and to remain in the enamel,

said substance (B) which has dissolved in the tooth whitening ingredient being precipitated by water in saliva to prevent the tooth whitening ingredient in the enamel from easily leaching out and being replaced by water in saliva, thereby changing optical properties of the enamel without chemical reactions so that the enamel looks apparently cloudy and whiter than original, and

after whitening, said one or more tooth whitening ingredients in the enamel is replaced by water from saliva, thereby going back to the original color of the enamel reversibly.

43. (New) The tooth whitening set as defined in claim 41, wherein the tooth whitening ingredient (A) is at least one selected from the group consisting of isopropanol, butanol, ethylene glycol, polyethylene glycol with an average molecular weight of 190 to 630, diethylene glycol, propylene glycol, dipropylene glycol, butylene glycol, and glycerin.

44. (New) A tooth whitening set for reversibly making tooth look white in the presence of water from saliva without chemical bleaching reactions due to a peroxide, comprising a nonaqueous gel composition for tooth whitening and a tool for its application which is detachably fitted to teeth while holding it, said nonaqueous gel composition comprising:

(A) a tooth whitening ingredient having a relative permittivity of 17.0 to 43.0 (at 25°C) and a vapor pressure of 0 to 7000 kPa (at 25°C), said ingredient (A) is present in an amount of 50.0 to 99.5 % by weight of the total amount of the composition,

(B) a substance which dissolves in said tooth whitening ingredient and is precipitated by an aqueous solution of calcium chloride, said substance (B) is C₁₄₋₂₂ higher fatty acids, and said substance (B) is present in an amount of 0.1 to 10 % by weight of the total amount of the composition, and

(C) a gelling agent in an amount of 0.1 to 15 % by weight of the total amount of the composition,

wherein said composition has a water content of less than 3 % by weight of the total amount of the composition and being free of a peroxide,

said tool for its application being a tape, sheet or film which retains and keeps the composition in position in contact with teeth for 1 to 120 minutes by covering the composition and preventing the dilution of the composition by invasion of saliva to ensure that the tooth whitening ingredient infiltrates into an enamel through its surface and to remain in the enamel, and

said substance (B) which has been dissolved in the tooth whitening ingredient being precipitated by water in saliva to prevent the tooth whitening ingredient in the enamel from easily leaching out and being replaced by water in saliva, thereby changing optical properties of the enamel without chemical reactions so that the enamel looks apparently cloudy and whiter than original.

45. (New) The tooth whitening set as defined in claim 44, wherein the tooth whitening ingredient (A) is at least one selected from the group consisting of isopropanol, butanol, ethylene glycol, polyethylene glycol with an average molecular weight of 190 to 630, diethylene glycol, propylene glycol, dipropylene glycol, butylene glycol, and glycerin.

46. (New) The tooth whitening set as defined in claim 44, wherein the tooth whitening ingredient (B) is shellac.

47. (New) The tooth whitening set as defined in claim 44, wherein the tooth whitening ingredient (B) is C₁₄₋₂₂ linear or branched higher fatty acids.

48. (New) The tooth whitening set as defined in claim 44, wherein the tooth whitening ingredient (B) is at least one selected from the group consisting of myristic acid, 7-hydroxymyristic acid, jalaric acid, 9,10,16-trihydroxypalmitic acid, palmitoleic acid, 12-hydroxystearic acid, isostearic acid, oleic acid, linoleic acid, linolenic acid, and erucic acid.

49. (New) A method for reversibly making teeth look white in the presence of water from saliva without chemical bleaching reaction due to a peroxide,

said method comprising applying a tape, sheet or film having a nonaqueous gel composition,

said gel composition comprising:

(A) a tooth whitening ingredient having a relative permittivity of 17.0 to 43.0 (at 25°C) and a vapor pressure of 0 to 7000 kPa (at 25°C), said ingredient (A) is present in an amount of 50.0 to 99.5 % by weight of the total amount of the composition,

(B) a substance which dissolves in said tooth whitening ingredient and is precipitated by an aqueous solution of calcium chloride, said substance (B) is a C₁₄₋₂₂ higher fatty acid, and said substance (B) is present in an amount of 0.1 to 10 % by weight of the total amount of the composition, and

(C) a gelling agent in an amount of 0.1 to 15 % by weight of the total amount of the composition,

wherein said composition has a water content of less than 3 % by weight of the total amount of the composition and being free of a peroxide,

wherein said composition has a water content of less than 3 % by weight of the total amount of the composition and being free of a bleaching agent or a peroxide,

said composition being coated thereon to teeth for 1 to 120 minutes so that the composition is stuck to teeth and covered by the tape, sheet or film thereby preventing the composition from being diluted by invasion of saliva,

said tooth whitening ingredient infiltrates into an enamel through its surface and to remain in the enamel,

said substance (B) which has dissolved in the tooth whitening ingredient being precipitated by water in saliva to prevent the tooth whitening ingredient in the enamel from easily leaching out and being replaced by water in saliva, thereby changing optical properties of the enamel without chemical reactions so that the enamel looks apparently cloudy and whiter than original, and

after whitening, said one or more tooth whitening ingredients in the enamel is replaced by water from saliva, thereby going back to the original color of the enamel reversibly.

50. (New) The method for reversibly making teeth look white as defined in claim 49, wherein the tooth whitening ingredient (A) is at least one selected from the group consisting of isopropanol, butanol, ethylene glycol, polyethylene glycol with an average molecular weight of 190 to 630, diethylene glycol, propylene glycol, dipropylene glycol, butylene glycol, and glycerin.

51. (New) The method for reversibly making teeth look white as defined in claim 49, wherein the tooth whitening ingredient (B) is shellac.

52. (New) The method for reversibly making teeth look white as defined in claim 49, wherein the tooth whitening ingredient (B) is a C₁₄₋₂₂ linear or branched higher fatty acid.

53. (New) The method for reversibly making teeth look white as defined in claim 49, wherein the tooth whitening ingredient (B) is at least one selected from the group consisting of myristic acid, 7-hydroxymyristic acid, jalaric acid, 9,10,16-trihydroxypalmitic acid, palmitoleic acid, 12-hydroxystearic acid, isostearic acid, oleic acid, linoleic acid, linolenic acid, and erucic acid.

54. (New) A method for keeping long the whitening effect,

said method comprising incorporating a substance (B) of a C₁₄₋₂₂ higher fatty acid into a nonaqueous gel composition for tooth whitening of tooth whitening set for reversibly making tooth look white in the presence of water from saliva without chemical bleaching reactions due to a peroxide, said tooth whitening set comprising the nonaqueous gel composition for tooth whitening and a tool for its application which is detachably fitted to teeth while holding it,

wherein said substance (B) is present in an amount of 0.1 to 10 % by weight of the total amount of the composition,

said gel composition comprising:

(A) a tooth whitening ingredient having a relative permittivity of 17.0 to 43.0 (at 25°C) and a vapor pressure of 0 to 7000 kPa (at 25°C), said ingredient (A) is present in an amount of 50.0 to 99.5 % by weight of the total amount of the composition, and

(C) a gelling agent in an amount of 0.1 to 15 % by weight of the total amount of the composition,

said composition having a water content of less than 3 % by weight of the total amount of the composition and being free of a peroxide,

said tool for its application being a tape, sheet or film which retains and keeps the composition in position in contact with teeth for 1 to 120 minutes by covering the composition and preventing the dilution of the composition by invasion of saliva to ensure that the tooth whitening ingredient infiltrates into an enamel through its surface and to remain in the enamel, and

said substance (B) which has been dissolved in the tooth whitening ingredient being precipitated by water in saliva to prevent the tooth whitening ingredient in the enamel from easily leaching out and being replaced by water in saliva, thereby changing optical properties of the enamel without chemical reactions so that the enamel looks apparently cloudy and whiter than original.

55. (New) The method for keeping long the whitening effect as defined in claim 54, wherein the tooth whitening ingredient (A) is at least one selected from the group consisting of

isopropanol, butanol, ethylene glycol, polyethylene glycol with an average molecular weight of 190 to 630, diethylene glycol, propylene glycol, dipropylene glycol, butylene glycol, and glycerin.

56. (New) The method for keeping long the whitening effect as defined in claim 54, wherein the tooth whitening ingredient (B) is shellac.

57. (New) The method for keeping long the whitening effect as defined in claim 54, wherein the tooth whitening ingredient (B) is a C₁₄₋₂₂ linear or branched higher fatty acid.

58. (New) The method for keeping long the whitening effect as defined in claim 54, wherein the tooth whitening ingredient (B) is at least one selected from the group consisting of myristic acid, 7-hydroxymyristic acid, jalaric acid, 9,10,16-trihydroxypalmitic acid, palmitoleic acid, 12-hydroxystearic acid, isostearic acid, oleic acid, linoleic acid, linolenic acid, and erucic acid.